

Bacteria Total Maximum Daily Load Studies for Hunting Creek, Cameron Run, and Holmes Run



Public Meeting
June 30, 2010

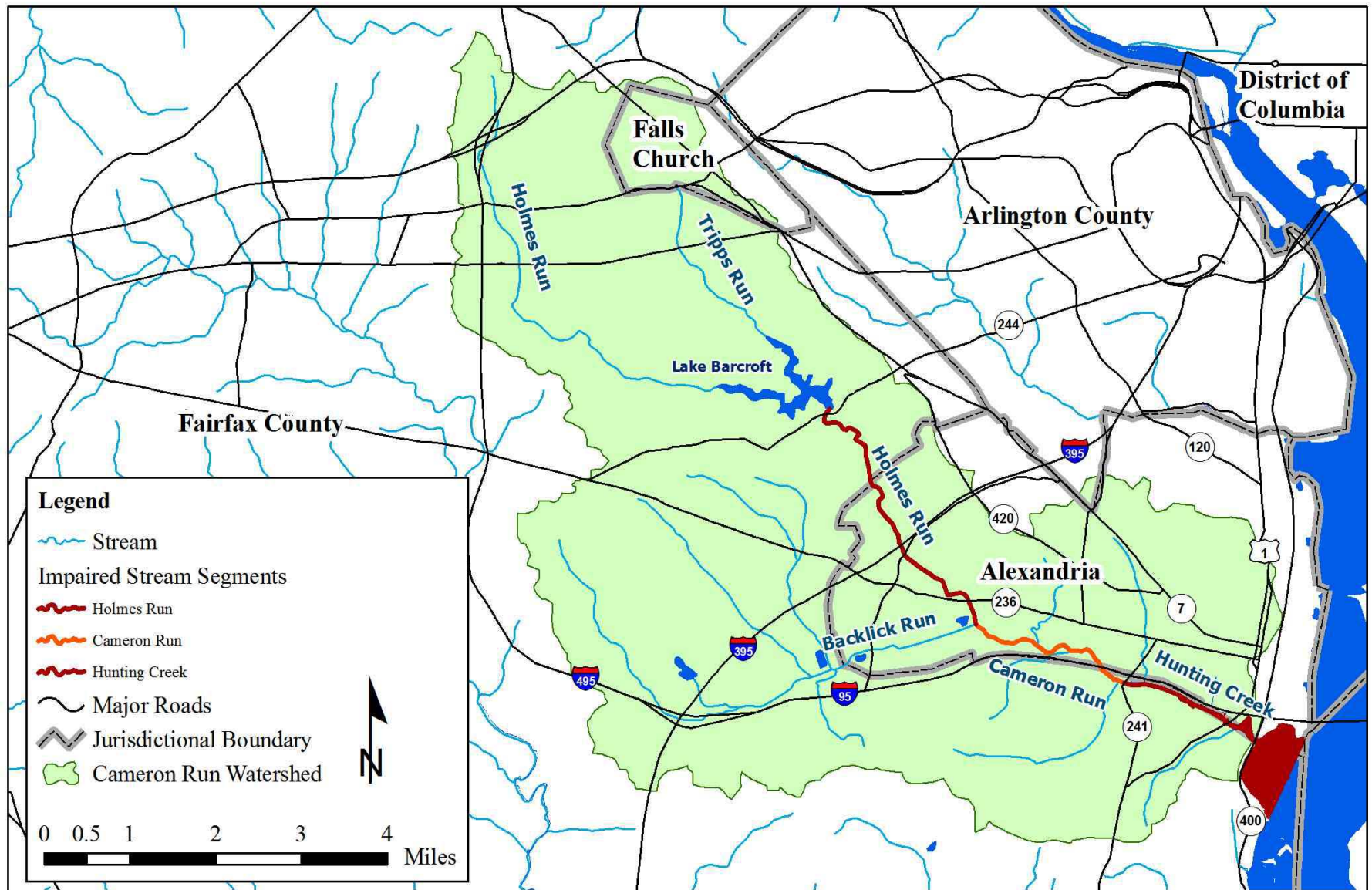


Why are we here?

Hunting Creek, Cameron Run, and Holmes Run do not meet water quality standards

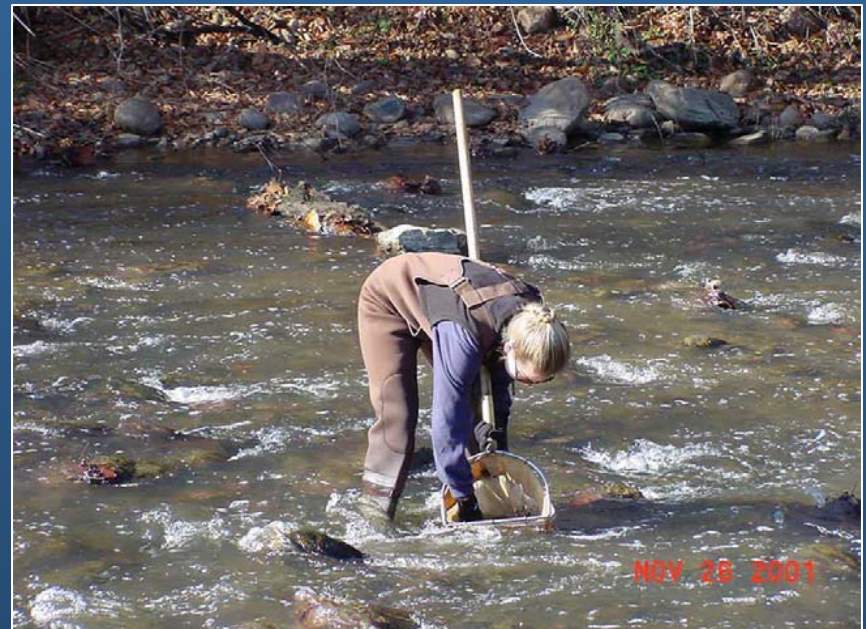
- Where are these streams located?
- How do we know standards aren't being met?
- Why don't these streams meet standards?
- What is being done to correct the problem?

Location of Impaired Segments



How do we know if water bodies in Virginia are healthy?

- Perform physical and chemical monitoring on water bodies throughout the state.
- Monitor parameters such as:
 - pH
 - Temperature
 - Dissolved Oxygen
 - Biological Community
 - Bacteria
 - Nutrients
 - Fish Tissues
 - Metals/Toxic Pollutants



What does DEQ do with the monitoring data that is collected?

Compare the data collected to the water quality standards.

Water Quality Standards:

- Regulations based on federal and state law.
- Set numeric and narrative limits on pollutants.
- Consist of designated use(s) and water quality criteria to protect the designated uses.



Designated Uses

- Recreational
- Public Water Supply
- Wildlife
- Fish Consumption
- Shellfish
- Aquatic Life



Recreational Use Impairment

What are Fecal Coliform and *E. coli* Bacteria?

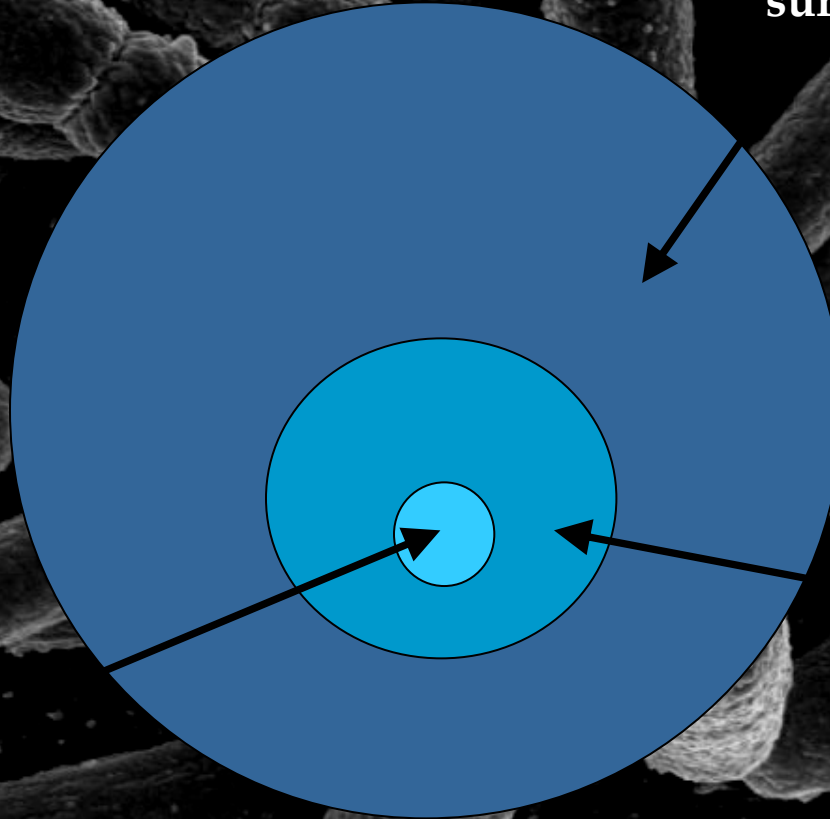
Coliform Bacteria:
Commonly found in soil, decaying vegetation, animal feces, and raw surface water

***Escherichia coli*:**

- Subset of fecal coliform bacteria
- Correlate better with swimming associated illness

Fecal Coliform:

- Found in the digestive tract of humans and warm blooded animals
- Indicator of the potential presence of pathogens in water bodies



Potential Sources of Fecal Coliform Bacteria



What happens when a water body doesn't meet water quality standards?

- Waterbody is listed as “impaired” and placed on the 303(d) list.
- Once a water body is listed as impaired, a Total Maximum Daily Load value must be developed for that impaired stream segment to address the designated use impairment.
- TMDL Studies are required by law:
 - 1972 Clean Water Act (CWA)
 - 1997 Water Quality Monitoring Information and Restoration Act (WQMIRA)

What is a TMDL ?

Total Maximum Daily Load

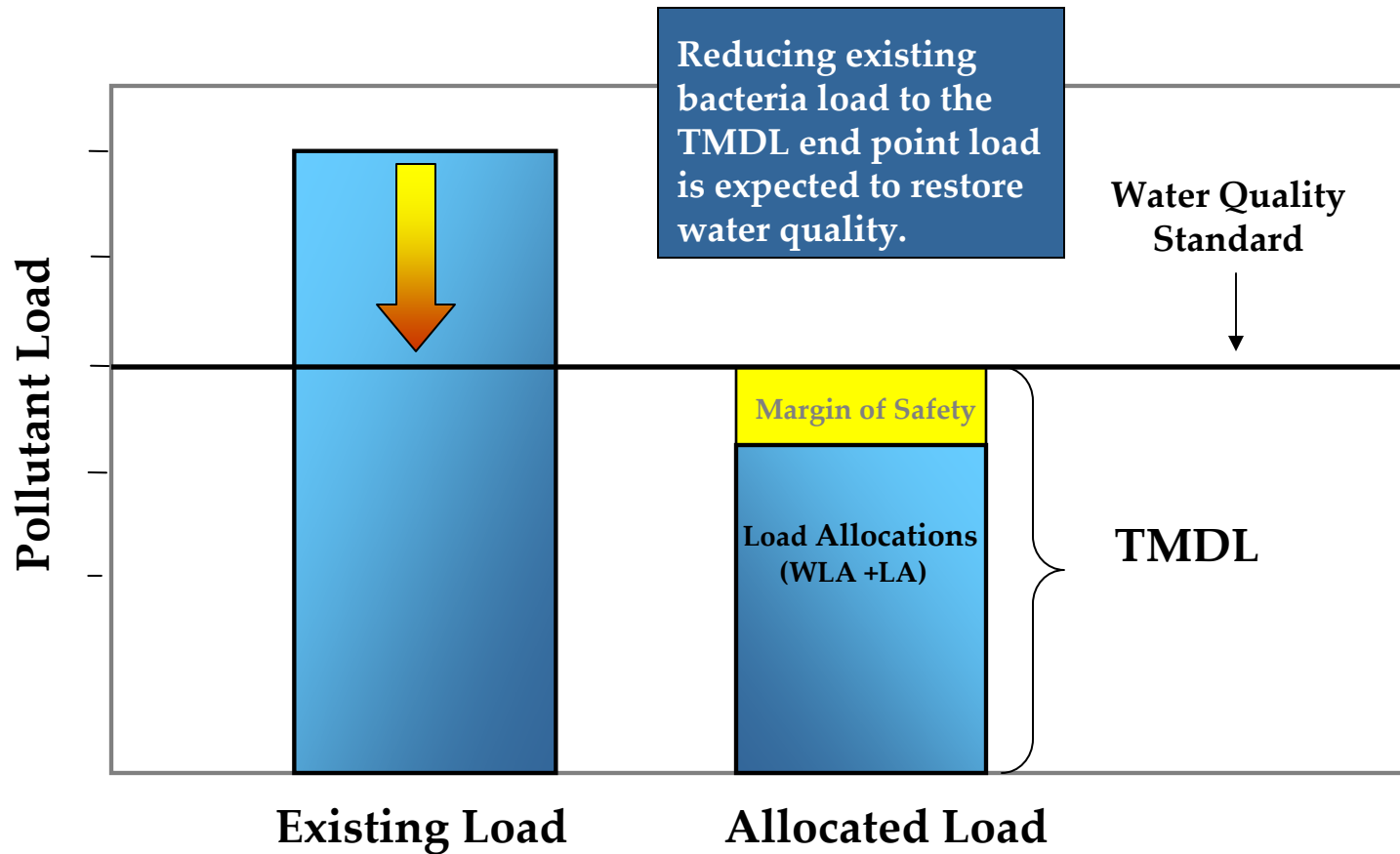
$$\text{TMDL} = \text{Sum of WLA} + \text{Sum of LA} + \text{MOS}$$

Where:

TMDL	=	Total Maximum Daily Load
WLA	=	Waste Load Allocation (point sources)
LA	=	Load Allocation (nonpoint sources)
MOS	=	Margin of Safety

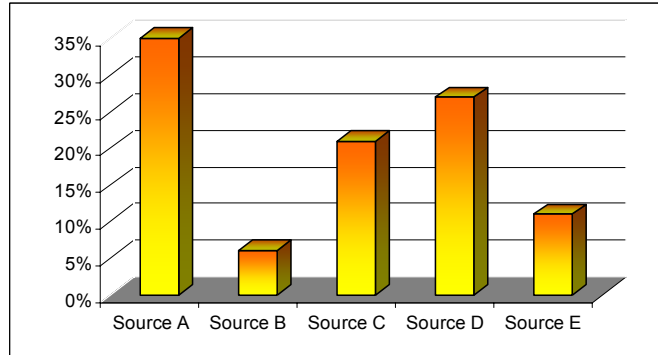
The TMDL represents the total amount of a certain pollutant a waterbody can receive and still meet water quality standards.

An Example TMDL

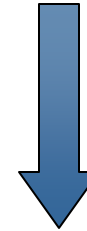


We are here

TMDL Study

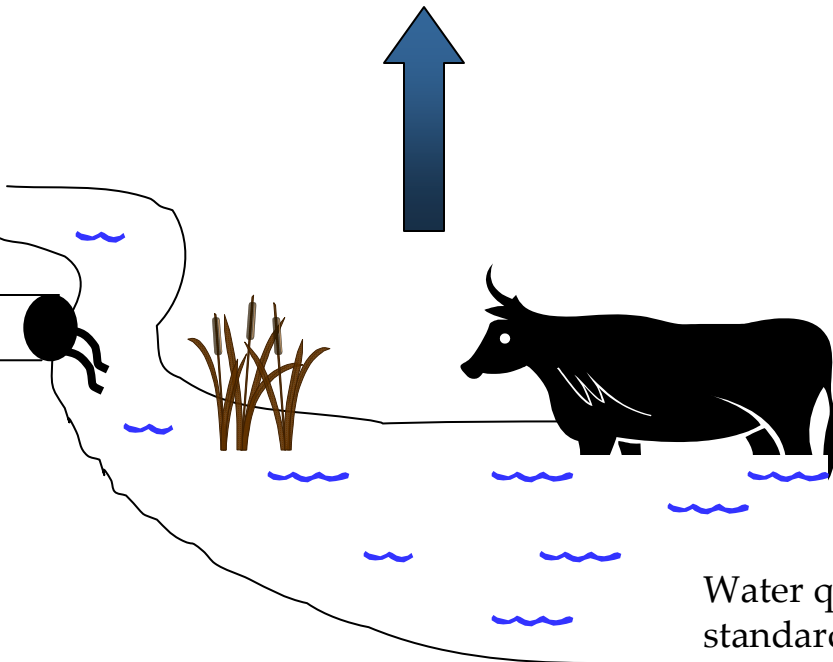


**Implementation
Plan**

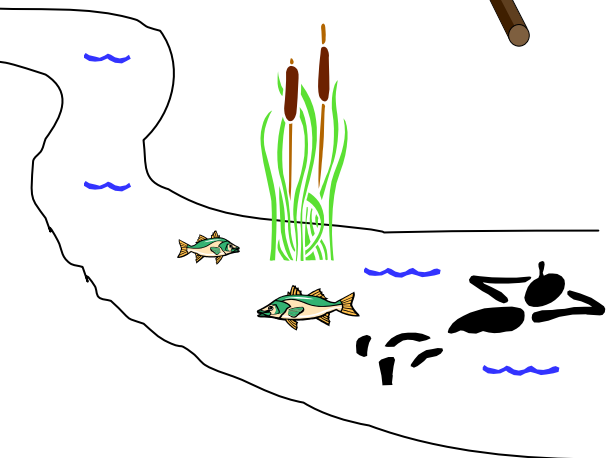


Implementation

Monitoring



Water quality
standards not met



TMDL Development Methodology

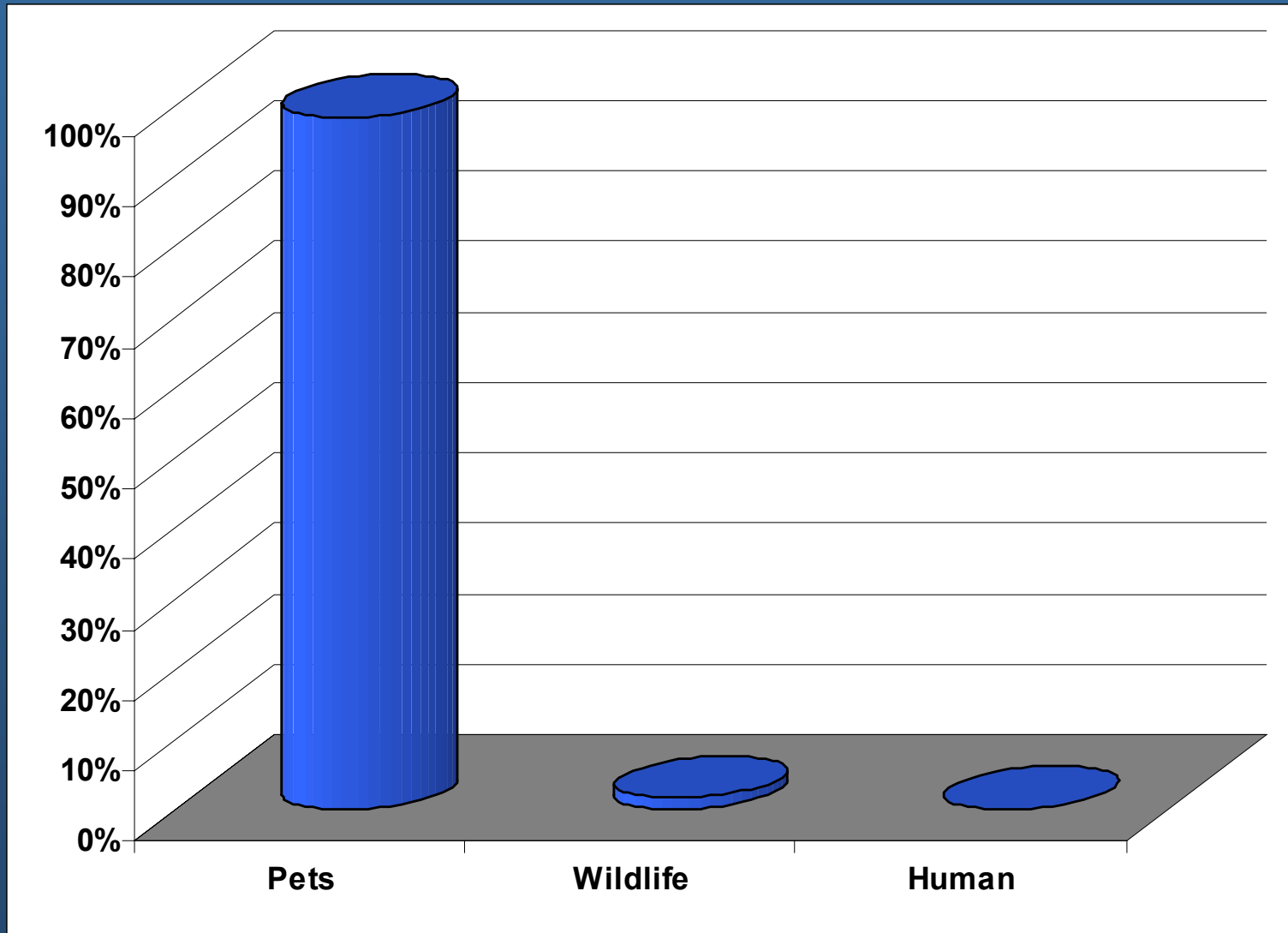
- Project Initiated: Early 2009
- Project has a tidal (Hunting Creek) and non-tidal component (Cameron Run and Holmes Run).
- Results from the non-tidal portion of the project are used in the tidal portion of the project.

TMDL Development Methodology for Non-Tidal Watershed

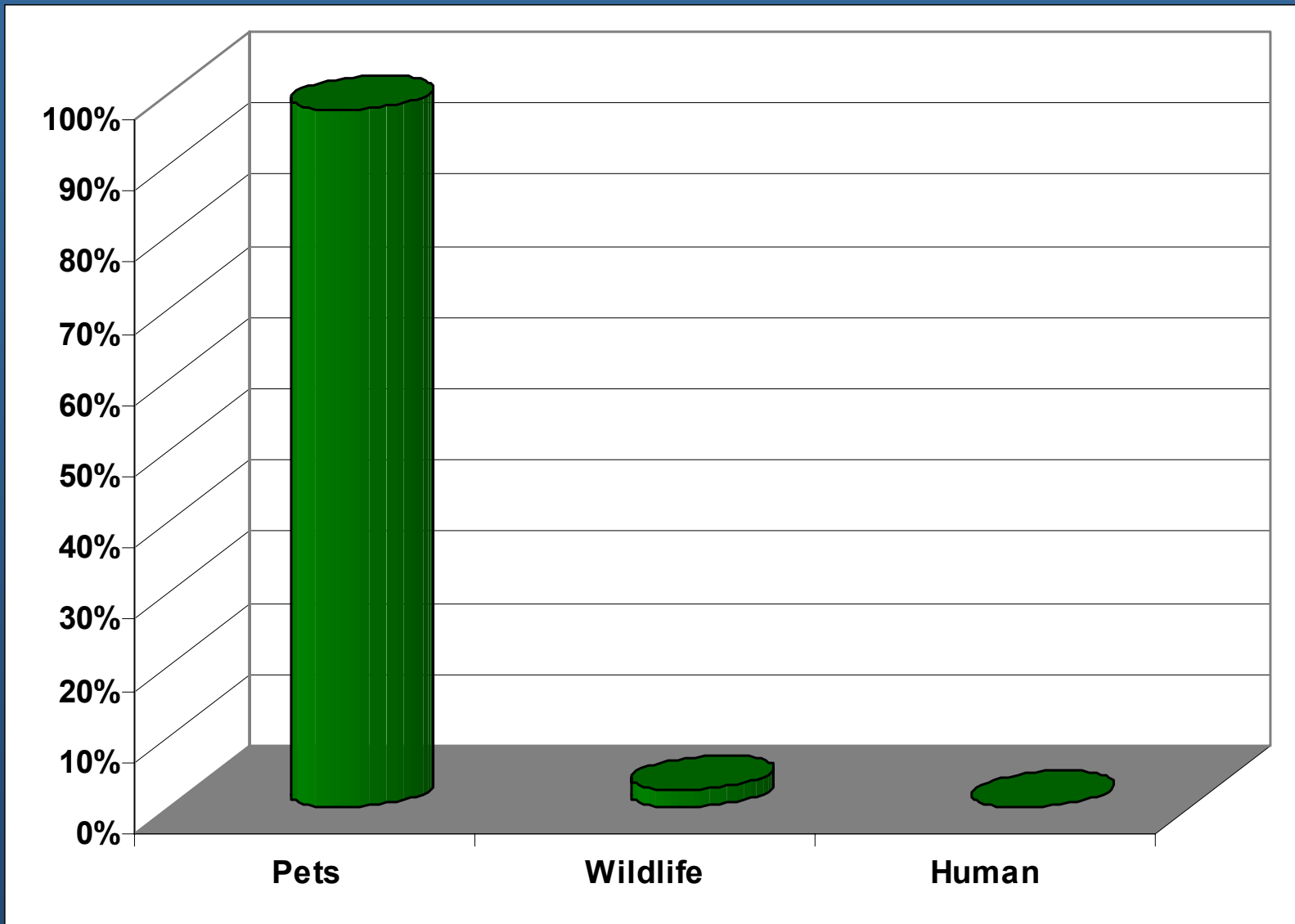
(Cameron Run and Holmes Run)

- Collected data and performed a watershed assessment.
- Evaluated the sources of bacteria in the watershed.
- Used a computer model to analyze the data.
- Determined the bacteria reductions required to meet water quality standards in Cameron Run and Holmes Run.

What are the Sources of Bacteria in Holmes Run?



What are the Sources of Bacteria in Cameron Run?



Holmes Run and Cameron Run Required Reductions by Source

How much do each of these sources need to be reduced in order to meet water quality standards?

Human Sources Reduction <i>(Sanitary Sewer Overflows and Failing Septic Systems)</i>	Wildlife Reduction <i>(Direct Deposition)</i>	Land Based Reduction <i>(Wildlife, pets)</i>	Exceedance Rate <i>(Monthly Geometric Mean)</i>
100%	50%	83%	0%

How Can these Reductions be Achieved?

TMDL Implementation Plan:

- Required by State Law (WQMIRA 1997*).
- Strategy for how to make reductions required by the TMDL Study.
- Relies heavily on public participation.
- Creates measurable goals and milestones to track the progress of the implementation.
- Incorporates Best Management Practices (BMPs) to achieve reductions.

Potential Implementation Plan Measures

- Proper Pet Waste Management
- Sanitary Sewer Maintenance and Inspections
- Stormwater Treatment
- Stream Corridor Restoration
- Education and Outreach
- Monitoring Programs



More information on TMDL Implementation Plans can be found on the DEQ website:

<http://www.deq.virginia.gov/tmdl/implement.html>

In the Meantime...

- Citizen monitoring
- Pick up after your pet
- Educate others



What about Hunting Creek?

- Complex project
 - Tidal model
 - Involves Combined Sewer System
 - Shares boundary with Potomac River
- Separate Public Meeting to Address Hunting Creek TMDL.
- Draft Report will be made available later in July. Draft report will address Hunting Creek, Cameron Run, and Holmes Run impairments.

Schedule for Project Completion

- Second Public Meeting – June 30, 2010
- Third Public Meeting – Mid July, 2010
- Draft Report Available for Public Comment – Mid July
- End of Public Comment Period – Mid August
- Response to Comments, Revisions to Report – August and September 2010
- Final Report due to EPA: October 1, 2010

Note: Schedule beyond June 30th Public Meeting is subject to change.

Comment Period

Comment Period for Materials Presented at Tonight's Meeting:

- June 30, 2010 to July 30, 2010
- Comments should be submitted in writing to:

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